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AUTHOR Freeman, B. J.; And Others
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ABSTRACT

The Behavior Observation Scale (BOS) was administered to 53 autistic children, 35 mentally retarded children matched for MA, and 35 normal children (all 2 to 5 years old) in an attempt to quantify autistic behavior. Ss were observed 3 days for 3 minutes through a one way mirror in a playroom setting where occurrence of 67 behaviors on the BOS was noted. Frequency analyses indicated that the 67 behaviors could be divided into three groups: those of diagnostic importance in the syndrome of autism independent of IQ; those differentiating high IQ but not low IQ autistic Ss from other groups; and those differentiating the low IQ autistic group from the others. (CI)

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The Behavior Observation Scale for Autism (BOS): Relationship of Frequency of behavior to I.Q.

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Abbreviated title:

Behavior Observation Scale for Autism

B.J. Freeman[2], E.R. Ritvo, I. Tonick, and L. Wake
Division of Mental Retardation and Child Psychiatry
The Neuropsychiatric Institute
UCLA School of Medicine

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The Behavior Observation Scale for Autism (BOS): Relationship of Frequency of Behavior to I.Q.

Abstract

The Behavior Observation Scale (BOS) is being developed to objectively differentiate autistic, normal and mentally retarded children of ages 30-60 months. Operational definitions and procedures are described and frequency data from 140 children are reported. Statistical analysis revealed that in order to assess the diagnostic significance of a behavior both the frequency of occurrence per subject and the number of children exhibiting it must be considered concurrently. Furthermore, it was also necessary to consider the I.Q. of the child when determining diagnostic importance. Methodological problems encountered when attempting to establish objective diagnostic data for the syndrome of autism are discussed.

In spite of the vast research that has been conducted over the last thirty years on the syndrome of autism, there has not yet been established an objective method for quantifying specific pathognomonic behaviors. Attempts to quantify the diagnosis by the use of checklists and rating scales have not received widespread use because they have failed to define behaviors objectively, relied on parental reports, did not utilize direct observations of subjects or had prior definitions of autism which they attempted to confirm. Some reports of observational studies in structured settings have aimed at quantifying "autistic" behaviors but fail to described the syndrome as a whole (cf., Freeman and Ritvo, 1979, for a detailed review).

Several other methodological problems have limited the development of an objective diagnostic system. First is the necessity of utilizing appropriate comparison groups to account for the overlap among behaviors exhibited by children with the syndrome of autism and mental retardation as well as normals (cf., Freeman, Ritvo, Guthrie, Schroth and Ball, 1979; Freeman, Guthrie, Ritvo, Schroth, Glass and Frankel, 1979). Second, since the syndrome of autism is defined by a heterogeneous set of symptoms, a scale must be based on many behaviors rated simultaneously and from large numbers of children (Ornitz and Ritvo, 1976). Such heterogeneity of symptoms complicates the development of a direct observational scale since subgroups of autistic children may show different sets of behaviors. For example, Bartak and Rutter (1976) reported that autistic children with testable I.Q.'s above 70 showed a different patterning of symptoms than those with testable I.Q.'s below 70. To mitigate this problem a scale must encompass a wide variety of behaviors, many of which a given child may not be expected to exhibit..

The purpose of the present study was to examine objectively the rate of occurrence of 67 objectively defined behaviors in groups of autistic, mentally retarded and normal children. The autistic group was divided into those with I.Q.'s above 70 (High IQ) and those with I.Q.'s below 70 (Low IQ) and compared

to the other two groups.

METHODS

Subjects

The subjects for this study were: (1) 61 children initially screened who meet the National Society for Autistic Children's (Ritvo, & Freeman, 1978) and DSM III diagnostic criteria for the syndrome of autism; (2) 35 children with a diagnosis of mental retardation matched to the autistic group on mental age obtained on the Merrill-Palmer Preschool Performance Test (Stutsman, 1931); and (3) 41 normal children matched to the other two groups by chronological age.

Each patient was examined by two Board Certified Child Psychiatrists who determined the clinical diagnoses. In two cases there was disagreement as to diagnoses and these children were not included in the data analyses. Developmental histories were also taken as well as language and cognitive tests and medical examinations.

Procedures

The Behavior Observation Scale (BOS) contains 67 objectively defined behaviors. Each child was observed through a one-way mirror in a playroom setting. The room contained age appropriate toys, a child's table and chair, two toy boxes, and one adult chair.

Each child was brought into the room by the examiner who told the child to do anything he/she wants. If the child was initially crying, observations did not begin until the child was quiet. An observation period consisted of recording the occurrence or absence of the 67 behaviors was scored as follows: "0" if it did not occur in the three-minute interval, "1" if it occurred once, "2" if it occurred twice and "3" if the child engaged in the behavior more or less continuously throughout the entire three minute period. In addition, responses to standardized stimuli (e.g., spinning top, burglar alarm, intermittent flashing light, a texture

ball, tuning fork, and the examiner) were recorded during the first ten seconds of the nine intervals. Each session began and ended with a three-minute baseline observation period. During the procedure the examiner in the playroom presented the various stimuli without comment. During one of the three minute intervals the examiner actively interacted with the child by attempting to engage in ball play. At all other times, the examiner was passive, sat in a corner and did not respond if the child initiated contact.

Each child was observed on three days, approximately one week apart. All behaviors were scored by two observers (the examiner in the room and another viewing via a one-way mirror) and exact agreement (i.e., number of agreements/ number of agreements plus disagreements) and interobserver reliability was obtained ($r = > .80$ on all but seven behaviors).

Data Analysis

Composite scores for each behavior were computed from the recorded ratings across observers, observation intervals, and sessions. Thus, each of the 140 children received scores which were the average of 54 observations for each of the 67 behaviors. Complete data were available on 121 children, 53 autistic, 35 mentally retarded and 33 normal. Several behaviors having to do with the specific use of the toys and crying were not recorded during the initial phases of the study and were thus eliminated. For statistical analysis, delayed and negative echolalia occurred so infrequently that they were combined with immediate echolalia and considered as one behavior. In addition, the measurement of communicative speech was rescaled by dividing scores by chronological age. This modification was employed because the use of speech is highly dependent on maturation. Thus, 59 variables were included in the subsequent analyses.

Two types of frequency analyses were conducted. First, simple occurrence versus nonoccurrence of behaviors were determined and the percentages of children in each group that exhibited them at least once was computed. Second, analyses

of variance were used to compare the groups between and within sessions as well as the overall mean rates of occurrence of each behavior.

Results & Discussion

Analyses of both means rates and percentage of children revealed that the 67 behaviors could be divided into the following groups: (1) Those which were of diagnostic importance in the syndrome of autism independent of I.Q.; (2) Those which differentiated the high I.Q. but not the low I.Q. autistic children from the other groups; and (3) Those which differentiated the low I.Q. autistic group from the others.

These results will be discussed in terms of the implication for developing objective diagnostic criteria for the syndrome of autism. Specific emphasis will be placed on the necessity for developing age and I.Q. based on diagnostic norms.

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Footnotes

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[2]Requests for reprints should be made to B.J. Freeman, Ph.D., Division of Mental Retardation and Child Psychiatry, Neuropsychiatric Institute, 760 Westwood Plaza, Los Angeles, California 90024